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LETTERS AND CORRESPONDENCE

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Married Couple Both With Myeloproliferative Disorder and Chromosome 3 Abnormality

To the Editor: It is known that different genotoxic agents that have an effect on hemopoiesis may induce clonal chromosomal changes. The data obtained from the cytogenetic investigations made predominantly on patients treated with radio- and/or chemotherapy showed that the most common anomalies in the secondary myeloid malignancies are −7/7q−, −5/5q−, +8, −3/der(3p or 3q), der(12p), and t(1;7)(p11;p11) [1,2]. Here we describe two cases: a wife and husband both with myeloproliferative disorder (MPD) and chromosome 3 abnormality. In May 1986, the patients had spent some time of intensive agricultural work in the region of Bulgaria most affected by the Chernobyl accident.

The husband, a 67-year-old male (case 1) was hospitalized in December 1989. The blood tests showed: hemoglobin 70 g/l, leukocyte count 12.4 × 10^9/1 (1% myeloblasts, 3% myelocytes, 5% metamyelocytes, 11% bands, 56% neutrophils, 1% basophils, 5% monocytes, and 18% lymphocytes), and platelets 216 × 10^9/l. The bone marrow was hypercellular with 2% blasts, 27% ring sideroblasts (by iron staining), and trilineage dysplasia. Hypolobulated micromegakaryocytes including mononuclear forms and megakaryocytes with depression anomalies were seen. The cytogenetic analysis of bone marrow established karyotype 46,XY,ins(3;3)(q21.3;q21.3q26.2) [50] (Fig. 1A). A diagnosis of refractory anemia with ring sideroblasts was made and the patient was treated only with blood transfusions. During the following 9 months the leukocyte count increased periodically from 7.0–9.0 to 11.2–15.0 × 10^9/l, associated with an increase of the immature granulocytes. In July 1991 the patient developed acute myeloid leukemia (FAB-type M1) and died.

The wife, a 68-year-old female (case 2) was hospitalized in December 1992. The blood test showed hemoglobin 116 g/l, leukocyte count 11.5 × 10^9/l (2% metamyelocytes, 11% bands, 70% segments, 4% monocytes, 13% lymphocytes), and platelets 1,062 × 10^9/l. The bone marrow was normocellular with an increased number of megakaryocytic cells (1%). The cytogenetic analysis of bone marrow revealed karyotype 46,XX[24]/46,XX,del(3)(p12.2p14.2),del(7)(q21.2q32) [26] (Fig. 1B). The aggregation induced by collagen, epinephrine, and ADP was increased. The diagnosis of essential thrombocythemia was made and chemotherapy with hydroxyurea and anti-aggregating therapy with indobufen were administered. In January 1995 the patient died because of polyorgan insufficiency as a result of gastric haemorrhage.

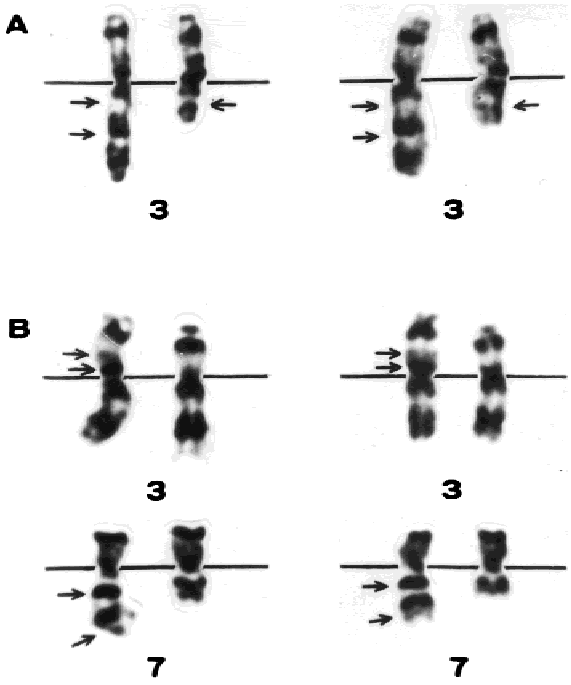

Fig. 1. Partial G-banding karyotypes of two metaphases from (A) case 1 showing ins(3;3)(q21.3;q21.3q26.2) and (B) case 2 showing del(3)(p12.2p14.2),del(7)(q21.2q32). The breakpoints are indicated with arrows; in case 2 the breakpoints are noted on normal homologues.

The phytohemagglutinin-stimulated peripheral blood of both patients showed normal karyotype patterns. Blood relationship between them as well as data of other etiologic factors that could be acting upon hemopoiesis were not revealed.

The fact that both cases had an MPD with chromosome 3 abnormality could be interpreted as a mere coincidence or as diseases induced by a common noxious agent. In favor of the latter interpretation is the kind of chromosome aberrations found in the patients, since der(3q), der(3p), and 7q− are one of the frequent cytogenetic anomalies in secondary myeloid malignancies [1,2]. Moreover, the trilineage bone marrow disorder described in case 1 is a characteristic feature of the secondary myelodysplastic syndrome [3]. To the point, it is also interesting that the breakpoint 3p14.2 by 3p deletion in case 2 concurs with the location of the most sensitive site of normal human chromosomes to aphidicolin-induced breakage [4]. On the other hand, from May 2–6, 1986 the Chernobyl radioactive cloud affected the Balkans, including Bulgaria [5]. The mean daily fallout has been approximately 3,000 times the background value of radioactivity in the region where the patients spent May 1986 engaged in agricultural work. We assume that the ionizing radiation is the etiologic factor that caused the patients' myeloid disorders.

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REFERENCES

1. Heim S: Cytogenetic findings in primary and secondary MDS. Leuk Res 16:43–46, 1992.
2. Iurlo A, Mecucci C, Van Orshoven A, Michaux J-L, Boogaerts M, Noens L, Bosly A, Louwagie A, Van Den Berghe H: Cytogenetic and clinical investigations in 76 cases with therapy-related leukemia and myelodysplastic syndrome. Cancer Genet Cytogenet 43:227–241, 1989.
3. Michels SD, McKeuna RW, Arthur DC, Brunning RD: A clinical and morphological study of 65 cases. Blood 65:1364–1372, 1985.
4. Smith DI, Glover TW, Gemmill R, Drabkin H, O'Connell P, Noylor SL: Report of the fifth international workshop on human chromosome 3 mapping 1994. Cytogenet Cell Genet 68:26–146, 1995.
5. ''Chernobyl: Ten Years On Radiological and Health Impact.'' Paris: OECD Publications, November 1996, pp 34–36.